The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A plug comprising:

(a) a flexible outer bushing having first and second ends;

(b) a connector attached to the first end of the bushing; and

(c) a fastener extending along the flexible outer bushing and attached to the connector, the fastener being configured such that actuation of the fastener causes the flexible outer bushing to expand outward, whereby the flexible outer bushing can be inserted into a hollow opening and can expand against the sides of the opening by actuation of the fastener.

2. The plug of Claim 1, wherein the connector is a female-threaded insert.

3. The plug of Claim 2, wherein the fastener extends along the bushing and comprises (1) an abutment surface for engaging the second end of the bushing and (2) male threads that are received in the female-threaded insert, and wherein actuation of the fastener comprises rotating the fastener to move the connector towards the second end.

4. The plug of Claim 1, wherein the fastener extends along the bushing and comprises an abutment surface for engaging the second end of the bushing and actuation of the fastener comprises causing the fastener to pull the connector toward the abutment surface.

5. A method of resin transfer molding a product having a hollow tube therein, the method comprising:

(a) placing an expandable plug into a hollow tube so that a portion of the plug extends along or beyond the intended finished line of the product being formed;

(b) expanding the expandable plug so that the expandable plug is pressed against the outer sides of the hollow tube;

(c) injecting resin about the hollow tube and around the plug in a resin transfer molding process such that excess resin is formed beyond the intended finish line; and

(d) cutting the excess resin along the intended finish line so that the plug is removed from the final finished part.

6. The method of Claim 5, wherein the plug comprises:

(a) a flexible outer bushing having first and second ends;

(b) a connector attached to the first end of the bushing; and

(c) a fastener extending along the flexible outer bushing and attached to the connector, the fastener being configured such that actuation of the fastener causes the flexible outer bushing to expand outward, whereby the flexible outer bushing can be inserted into a hollow opening and can expand by actuation of the fastener against the sides of the opening.

7. The method of Claim 6, wherein the cutting step comprises cutting the fastener so that the outer bushing no longer expands outward and is free to fall out of the hollow tube.

8. The method of Claim 6, wherein the fastener extends along the bushing and comprises an abutment surface for engaging the second end of the bushing and actuation of the fastener comprises causing the fastener to pull the connector toward the abutment surface.

9. The method of Claim 5, wherein the expandable plug is cut during the cutting process so that the plug is no longer expanded against the sides of the hollow tube and falls out of the hollow tube.

10. A reinforced core structure for use in a resin transfer molding process comprising:

(a) an expanded core having a longitudinal axis;

(b) a first set of braided fibers extending from a first end of the expanded core to a first location and reversing from the first groove over itself and back towards the first end; and

(c) a second set of braided fibers extending from the first end over the first set of braided fibers and to a second location beyond the first location and reversing from the second location, back over itself and rearward to the first end.

11. The reinforced core structure of Claim 10, wherein the expanded core comprises a plurality of grooves extending transverse to the longitudinal axis;

12. The reinforced core structure of Claim 11, wherein a first groove is located at the first location, and further comprising:

a first cord tying off the first set of braided fibers and extending between the overlapped layers of the first set of braided fibers and opposite the first groove so that the first cord presses the first set of braided fibers into the first groove.

13. The reinforced core structure of Claim 12, wherein a second groove is located at the second location and further comprising:

a second cord tying off the second set of braided fibers and extending between the overlapped layers of the second set of braided fibers and opposite the second groove so that the second cord presses the second set of braided fibers into the second groove.

14. The reinforced core structure of Claim 13, wherein the perimeter of the expanded core between the first and second grooves is substantially the same as the perimeter of the expanded core in the region between the first groove and the end and the overlapped layers of the first set of braided fibers extending over this latter area.

15. The reinforced core structure of Claim 14, further comprising:

a third set of braided fibers extending from the first end, past the first and second grooves, to a third groove beyond the second groove and reversing at the third groove over itself and back to the first end.

16. The reinforced core structure of Claim 15, further comprising:

a third cord tying off the third set of braided fibers and extending between the overlapped layers of the third set of braided fibers and opposite the third groove so that the third cord presses the third set of braided fibers into the third groove.

17. The reinforced core structure of Claim 15, wherein the perimeter of the expanded core between the first and second grooves and the overlapped layers of the second set of braided fibers extending thereover is substantially the same as the perimeter of the expanded core in the region between the second and third grooves.

18. The reinforced core structure of Claim 13, further comprising:

a third set of braided fibers extending from the first end, past the first and second locations, to a third location beyond the second location and reversing at the third location over itself and back to the first end.

19. A method of forming a reinforced core structure for use in a resin transfer molding process comprising:

(a) providing an expanded core having a longitudinal axis;

(b) braiding a first set of fibers from a first end of the expanded core to a first location on the expanded core;

(c) reversing the direction of the braiding of the first set of fibers at the first location and continuing braiding back to the first end so that the first set of braided fibers is braided back upon itself to form a first dual layer fiber structure;

(d) braiding a second set of fibers over the first set of braided fibers from the first end beyond the first location to a second location; and

(e) reversing the braiding direction of the second set of fibers at the second location back toward the first end so that the second set of braided fibers is braided back upon itself to form a second dual layer fiber structure.

20. The method of Claim 19, further comprising the step of tying the first set of braided fibers at the first location with a cord before reversing direction of the braided fibers.

21. The method of Claim 20, further comprising the step of tying the second set of braided fibers at the second location with a cord before reversing direction of the braided fibers.

22. The method of Claim 19, wherein the expanded core comprises a plurality of grooves extending transverse to the longitudinal axis;

23. The method of Claim 22, wherein a first groove is located at the first location, and further comprising:

tying the first set of braided fibers with a cord before reversing direction of the first set of braided fibers, the cord being arranged opposite the first groove such as to pull the first set of braided fibers into the first groove.

24. The method of Claim 23, wherein a second groove is located at the second location, and further comprising:

tying the second set of braided fibers with a cord before reversing direction of the second set of braided fibers, the cord being arranged opposite the groove such as to pull the second set of braided fibers into the second groove.

25. The method of Claim 24, wherein the perimeter of the expanded core between the first and second grooves is substantially the same as the perimeter of the expanded core in the region between the first groove and the end and the overlapped layers of the first set of braided fibers extending over this latter area.

26. The method of Claim 25, further comprising:

braiding a third set of fibers from the first end over the first and second sets of braided fibers to beyond the second groove to a third groove; and

reversing the braiding direction of the third set of fibers at the third groove back toward the first end so that the third set of braided fibers is braided back upon itself to form a third dual layer fiber structure.

27. The method of Claim 26 further comprising:

tying the third set of braided fibers with a cord before reversing direction of the third set of braided fibers, the cord being arranged opposite the groove such as to pull the third set of braided fibers into the third groove.

28. The method of Claim 26, wherein the perimeter of the expanded core between the first and second grooves and the overlapped layers of the second set of braided fibers extending thereover is substantially the same as the perimeter of the expanded core in the region between the second and third grooves.

29. The method of Claim 19, further comprising:

braiding a third set of fibers from the first end over the first and second sets of braided fibers to beyond the second location to a third location; and

reversing the braiding direction of the third set of fibers at the third location back toward the first end so that the third set of braided fibers is braided back upon itself to form a third dual layer fiber structure.

30. A method of preparing a reinforced core structure for a product to be formed in a resin transfer molding process utilizing a resin, the method comprising:

(a) applying fibers over a core beyond the final finished line for the product to be formed;

(b) applying a tackifier solution to the fibers located at the final finish line, the tackifier solution comprising a reduced resin concentration from the final resin concentration of the product to be formed in the resin transfer molding process;

(c) locally consolidating the tackifier solution; and

(d) cutting along the final finish line.

31. The method of Claim 30, wherein the tackifier solution comprises resin to be used for the resin transfer molding process diluted by a solvent.

32. A radius filler for use in a resin transfer molding system, the radius filler comprising:

(a) unidirectional tows; and

(b) a braided sleeve of fibers extending around the unidirectional tows.

33. The radius filler of Claim 32, further comprising a tackifier solution added to the braided sleeve, the tackifier solution comprising a diluted mixture of the resin to be used in the resin transfer molding system.

34. The radius filler of Claim 33, wherein the tackifier solution comprises resin to be used for the resin transfer molding process diluted by a solvent.

35. A method of forming a radius filler for use in forming a preform to be used in a resin transfer molding process, the method comprising:

(a) providing unidirectional tows; and

(b) braiding a sleeve of fibers around the unidirectional tows.

36. The method of Claim 35, further comprising:

(a) applying a tackifier to the braided sleeve, the tackifier comprising a diluted solution including the resin to be used in the final resin transfer molding process; and

(b) consolidating the tackifier so as to lend rigidity to the radius filler.

37. The method of Claim 36, further comprising:

(a) adjoining the radius filler with a preform; and

(b) resin transfer molding the radius filler and the preform.

38. A method of forming a core structure comprising:

(a) providing a mold having an internal cavity;

(b) arranging a prepreg along the inside of the internal cavity, the prepreg being of a size such that the prepreg can extend around a circumference of the mold;

(c) placing an expandable foam material in the cavity of the mold and within the prepreg material;

(d) heating the expandable foam material so as to expand the foam material within the prepreg material so to press the prepreg material against the walls of the cavity of the mold; and

(e) curing the expandable foam material and the prepreg material so as to form the core structure.